

INSTALLATION & OPERATING INSTRUCTIONS FOR

Colortrac SmartLF

Technical Document Scanners

**MODEL**

4080E

4080C

4080M

S/N: _____



Colortrac
Our Business is Your Image

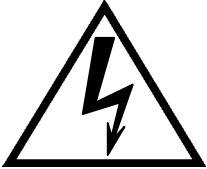
1. SAFETY PRECAUTIONS

To prevent fire or shock hazard do not expose the scanner to rain or moisture.

Do not cover the scanner with paper or drawings which might obstruct the unit's vents for long periods while the unit is being operated as this may lead to overheating and constitute a possible fire hazard.

Do not modify the desk mounted scanner by removing the rubber feet as this may impair the air circulation around the unit and lead to overheating.

Avoid leaning heavily on the scanner when it is mounted on the stand as the unit could be damaged or become unstable and result in personal injury.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



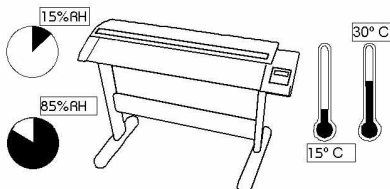
This symbol is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.



This symbol is intended to alert the user to the presence of important operating and maintenance instructions. The equipment being used constitutes a potential finger trap and could cause personal injury.



SAFETY INSTRUCTIONS



DO NOT expose the scanner to extreme temperature conditions (below 15°C or above 30°C)
DO NOT expose the scanner to extreme humidity conditions (less than 15% or more than 85% Relative Humidity).



DO NOT expose the scanner to direct sunlight, rain or storm.

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(The serial number of this unit will be required when seeking support or maintenance for SmartLF. Record it on the front page of the manual for easy reference).

3. UNPACKING SMARTLF FROM ITS BOX

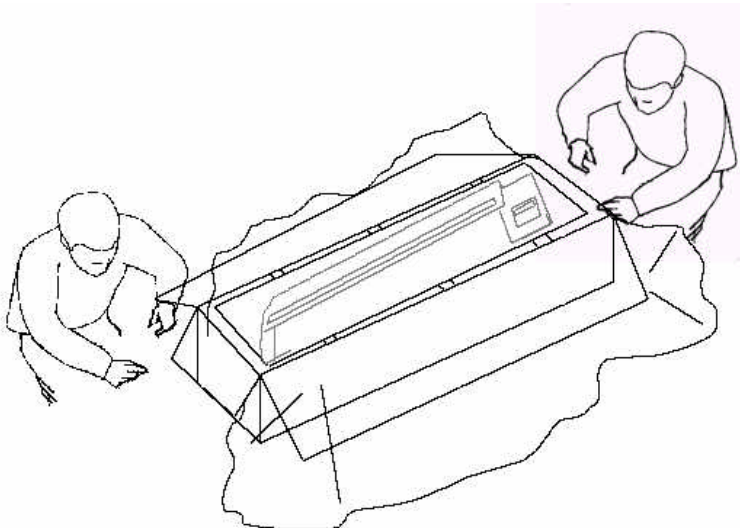
SmartLF ships in a single double-skinned box (35kgs). It is advisable to prepare a strong desk surface or similar area capable of taking the weight of the scanner (26.5kg). You will need an assistant to lift the scanner from its carton.

PARTS LIST

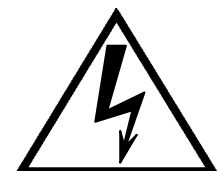
Quick start guide A3 sheet	1
Power cable (specified for country)	1
USB2 scanner data cable (2m)	1
Software installation CD (includes this manual in pdf format).....	1
Document Support Tray	3

LIFTING THE SCANNER FROM ITS CARTON

1. Make sure the scanner box is resting on the floor the correct way up (look at the name on the side).
2. With the help of an assistant remove the lid from the larger box and then take out the three foam spacers that protect the inner box. The inner box contains the scanner.
3. Remove the lid from the smaller box and pull back the plastic wrapping to expose the top of the scanner.
WARNING: DO NOT TRY TO REMOVE THE SCANNER WHILE STILL INSIDE ITS PLASTIC WRAPPING AS THIS WILL MAKE IT MORE DANGEROUS TO HANDLE.



4. With two people, lift an end of the scanner each and begin to remove it from its packing carton. Observing correct lifting technique (i.e. bend knees and straight back) lift the scanner and position it carefully onto the working area or the optional floor stand. The choice of position for SmartLF should allow proper air circulation around the device in accordance with normal office equipment practice.
5. The electricity supply should be taken from a switched output and be located within easy reach of the scanner operator.
6. The computer used with SmartLF should be located so as not to strain the USB cable or present a cable tripping hazard to the operator or others.



4. REMOVING THE SHIPPING PROTECTION AND SETTING UP SMARTLF

Before attempting to use SmartLF it is essential that the shipping protection which protects the scan glass is removed from inside the scanner:

- Open the SmartLF lidsee section 5. Opening the SmartLF lid
- Remove the piece of foam and retain with the packaging for the scanner. If you need to transport the scanner later you will need to replace this item to protect the scanner optics.
- Close the SmartLF lidsee section 6. Closing the SmartLF lid
- Fit the three paper support trays by compressing (springing) them into the slots on the back of the scanner
- Connect the scanner to the local electricity supply using the cable provided

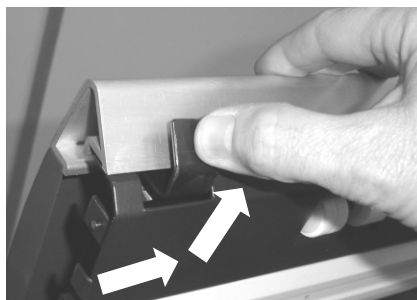


IMPORTANT – DO NOT CONNECT THE SCANNER TO THE COMPUTER UNTIL INSTRUCTED

5. OPENING THE SMARTLF LID

The SmartLF lid is in two parts, the complete lid, which is opened to allow cleaning of the scan glass and the lightweight cover part which can be opened to permit adjustment of the document scanning pressure.

To raise the whole lid first PRESS IN AND PUSH UPWARDS the two side catches. With the catches pressed in, use the forefingers and thumbs to lift the lid slowly upwards in an arc on its rear hinges. The lid will lock in a position leaning slightly backwards from the vertical.



During opening the catches can be 'latched' to prevent damage to the end mouldings when the lid is closed later. Alternatively remember to squeeze the catches inwards towards the centre of the scanner when lowering the lid back down again. DO NOT try to lower the lid with the catches in the locked position.



Lid showing latches in the LID CLOSED or OUT position. The lid is heavy but will lock in the upright position (about 110°). It is recommended that the operator avoid leaving the scanner unattended while the lid is open.



6. CLOSING THE SMARTLF LID

To close the SmartLF lid, first check that the latches are in the LID OPEN or retracted position and then lower it slowly to the horizontal position. Engage the latches at the lowest lid position by pushing gently on the lid while at the same time pushing down and outwards on the catch levers to release them into the lock position. Allow the lid to spring upward until the mechanism locks into position. Repeat on the opposite side. The lid is now closed and ready for scanning.

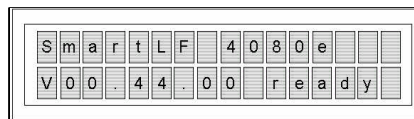


Attempting to lift the lid of the scanner without using the side catches may open the top cover that provides access to the variable paper hold down adjustment sliders.

7. GETTING STARTED



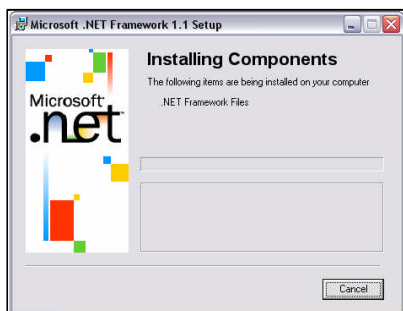
SmartLF can now be switched on. The liquid crystal text display (LCD) will light up and after a few seconds will display the model number and firmware level of SmartLF. After loading a document the display will change to the word READY.



Start up the Windows 2000 or Windows XP Professional / XP Home computer that will be used with SmartLF. Wait for Windows to finish loading.

FOR MORE DETAIL ON MINIMUM SPECIFICATIONS FOR BEST SMARTLF PERFORMANCE SEE APPENDIX 1.

THE WINDOWS XP .NET FRAMEWORK V1.1 ENVIRONMENT



SmartLF software requires the Windows.NET V1.1 Framework environment to be installed on the scanner computer. It is recommended to install .NET even if you purchased the ScanWorks or CopySmart software options. SmartLF is simple to use and can be run on any computer connected to the SmartLF scanner without a license key.

We have included Windows .NET Framework V1.1 on the SmartLF Software Installation CD which ships with this scanner but recommend that you check the Internet in case a more recent version has been released by the time you read this document. Go to the Windows update pages at www.microsoft.com for more information.

In time .NET will become part of XP via the Service Pack upgrade and it will not be necessary to add it to the installed operating system. See Appendix 3 in this document for more information on .NET Framework and how to check if it is installed on the computer you intend to use for SmartLF.

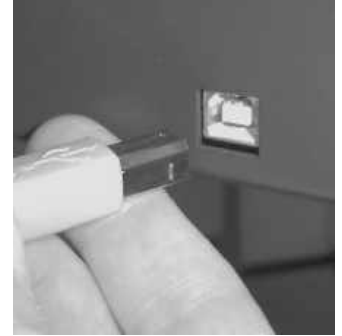
CONNECTING THE USB2 CABLE TO SMARTLF

With SmartLF switched on, locate the included USB2 cable and plug the smaller square end into the back of the scanner (see picture).

SMARTLF MUST BE USED WITH A USB2 COMPUTER INTERFACE. ATTEMPTING TO USE SLOWER USB1.1 INTERFACES WILL CAUSE SMARTLF TO SCAN VERY SLOWLY AND POSSIBLE CALIBRATION MALFUNCTION MAY RESULT

IMPORTANT: IF YOU ARE USING OTHER USB1.1 KEYS (DONGLES) ON THE SAME COMPUTER ENSURE THAT SMARTLF DOES NOT SHARE THE SAME USB CIRCUITRY INSIDE THE COMPUTER OR SCANNING SPEEDS WILL BE REDUCED.

DO NOT CONNECT SMARTLF TO THE PC YET!



PREPARING TO LOAD THE DRIVER

STEP 1



PLUG THE REMAINING END (FLAT SECTION) OF THE USB2 CABLE INTO A SPARE USB2 INTERFACE - THE DRIVER INSTALLATION WILL START AUTOMATICALLY.

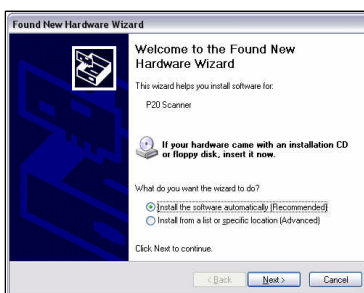
NOTE: At this point Windows XP will detect the new hardware and display the following message in the System Tray area (normally the lower right-hand side of the screen). Please note that the scanner at this point may be referred to as P20 Scanner – this is completely normal.



AT THIS POINT WINDOWS SHOULD DETECT SMARTLF AND AUTOMATICALLY BEGIN RUNNING THE WINDOWS HARDWARE WIZARD. HAVE THE COLORTRAC SMARTLF SOFTWARE INSTALLATION CD READY.

WINDOWS ASKING FOR THE DRIVER

STEP 2

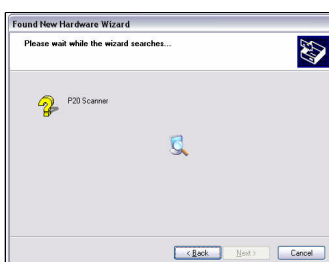


WAIT for a few moments to allow Windows to start the Hardware Wizard. The wizard will take you through the next steps of the installation. The wizard will respond by displaying this screen.

NOTE: If the CD is not detected in the next step you will need to tell the Wizard to search for the drivers automatically by clicking the first button or direct the search manually by clicking the second button.

INSERTING THE COLORTRAC SMARTLF CD

STEP 3



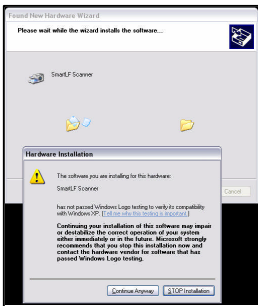
At this point insert the SmartLF CD containing the driver. After one or two seconds Windows will detect the CD and replace the wizard Welcome screen (STEP2) with the 'wizard searching' screen shown here.

IF THE SMARTLF CD STARTS - PRESS EXIT. ALLOW THE HARDWARE WIZARD TO CONTINUE

NOTE: SmartLF may be referred to as 'P20'. This is normal.

STEP 4

Windows will search through the CD contents until it locates the driver and then transfer it to the computer file system. You should see a screen similar to this.

STEP 5

During copying Windows will interrupt the process with a 'Continue Anyway / STOP installation - *Windows Logo testing failure*' message.

This is completely normal.

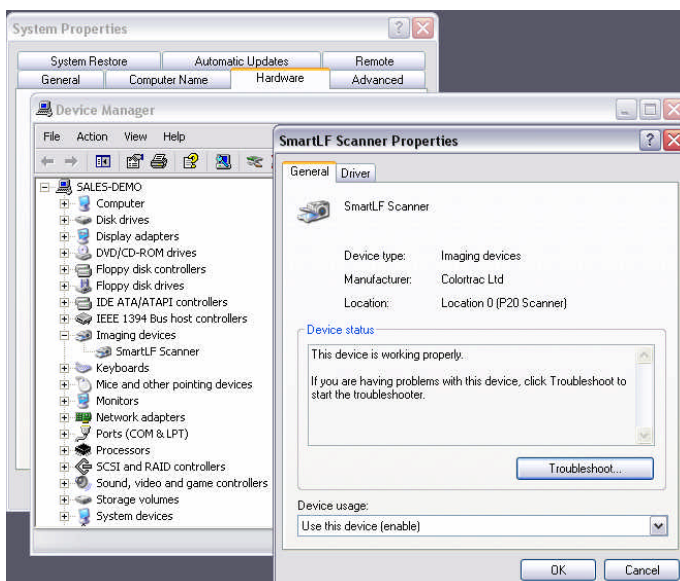
Click the button labelled '**Continue Anyway**'

STEP 6

The Hardware Wizard will finish by showing this screen. Click the Finish button to complete the installation of the SmartLF driver.

The SmartLF USB driver is now transferred. Whenever the scanner is plugged into the computer, Windows will identify the USB (Universal Serial Bus) device as SmartLF and automatically load this driver. The scanner can be plugged and disconnected freely like any regular USB device without needing to re-boot the computer.

CHECKING FOR THE SMARTLF DRIVER



The Windows system will allow the operator to check for correct installation of the driver. Should the driver ever be accidentally removed or require updating or in the unlikely event of the user experiencing problems with SmartLF this check can be useful.

Using the Windows Control Panel click on the System Properties icon. From here click the Hardware tab and look for the Imaging devices entry.

Right clicking on the SmartLF Scanner entry will bring up the Properties for the device where the status of the scanner is displayed. The status should be 'This device is working properly'

NOTE: When SmartLF is not connected or not powered-up there will be no SmartLF Scanner entry visible under the Imaging devices heading in the hardware listing of the computer.

8. INSTALLING SMARTLF S/W FROM THE SOFTWARE INSTALLATION CD

1. Insert the software installation CD. It should Auto-Play. If the CD fails to launch go to the CD drive using Explorer and double-click the launch file to start the installer manually.
2. Click the 'Install Products' button.
3. At the install products screen click the '.NET install' button if you have not already installed .NET from the Internet.
4. At the install products screen click the 'SmartLF Scan' button to install the SmartLF application.

Once the installation is complete you will be able to locate the SmartLF program under Program Files > Colortrac > SmartLF.

You have now installed the SmartLF application.

5. Testing the software installation

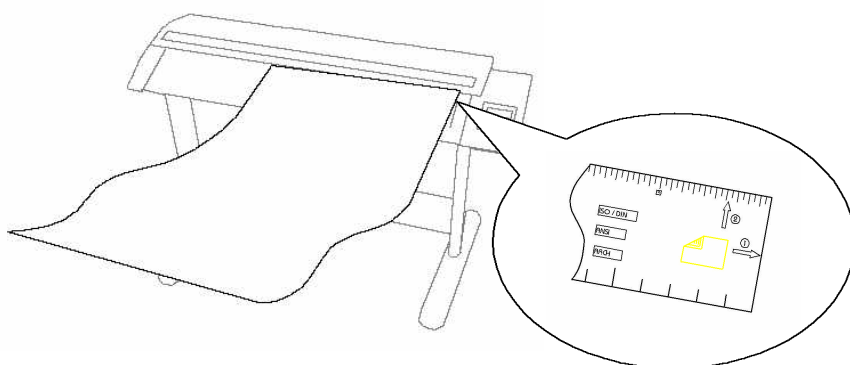
Go to Programs from the Windows Start button and navigate to the SmartLF entry and release. After a small delay the SmartLF screen will display. Note that if the scanner is not powered up or the USB2 cable is not connected the software interface will appear greyed as shown below.



9. LOADING A DOCUMENT INTO SMARTLF

Documents are loaded right-side justified and face-down with the edge of the paper in line with the first mark of the document ruler markings. Look for the yellow paper symbol.

Colortrac SmartLF is not limited to scanning recognised document sizes, for example A1, A2 and E size. The maximum scan width for SmartLF is 1016mm (40") but the maximum length is limited only by the attached computer and scanning software. As soon as the READY status is displayed (after 10 seconds), documents can be loaded into the scanner.



10. SMARTLF DOCUMENT HANDLING

There are two areas where a clearer knowledge of the SmartLF system is important. Refer to Sections 12 & 13 for details on setting the Variable Paper Hold Down (VPHD).

. . DURING THE LOADING PROCESS

AUTO SmartLF document loading is fully automatic – no buttons need to be pressed.

With two hands, place the document on the scanner with the longest edge (if possible) towards the scanner opening. The document is now pushed against the stationary rollers, 'squared up' and held in this position. The display will change to 'LOAD' as SmartLF detects the media. After one second SmartLF will start to load the document.

Once a document is loaded, SmartLF software icons or the scanner panel itself can be used to start the scanning process. The panel display will show the word 'Scanning' just before and during movement of the document through the scanner.

REMOVING A LOADED DOCUMENT/ CORRECTING A SKEWED DOCUMENT



Pressing the red button on the SmartLF panel *less than two seconds* after loading will **ABORT THE LOAD** and rewind the document. This is useful when a document skews slightly, loads awkwardly or needs to be rotated to a better or longer side.

If the display has returned to READY the document must be advanced to the rear of the scanner or physically removed by releasing the SmartLF lid using the catches. (The paper transport has been optimised and no rewind from the panel or software is possible).



ADVANCING (FORWARD FEEDING) THE DOCUMENT



After a document is loaded pressing this button will *advance* the document. SmartLF will move the document for as long as the button is held down.

EJECTING THE DOCUMENT



After a scan has completed and where the software is instructed to *hold* the document, pressing this button will *eject* the document from the rear of the scanner.

. . WHILE SMARTLF IS UNDER PROGRAM CONTROL

STOPPING SmartLF



During scanning, pressing this button will abort the scan process and eject the document. The SmartLF software will remain running (hourglass icon) ready for the next document to be loaded. To stop SmartLF software processing the batch press the function button again.

(For ScanWorks users when 'Do nothing' is set, the document will stop. When Eject is set the document will be ejected).

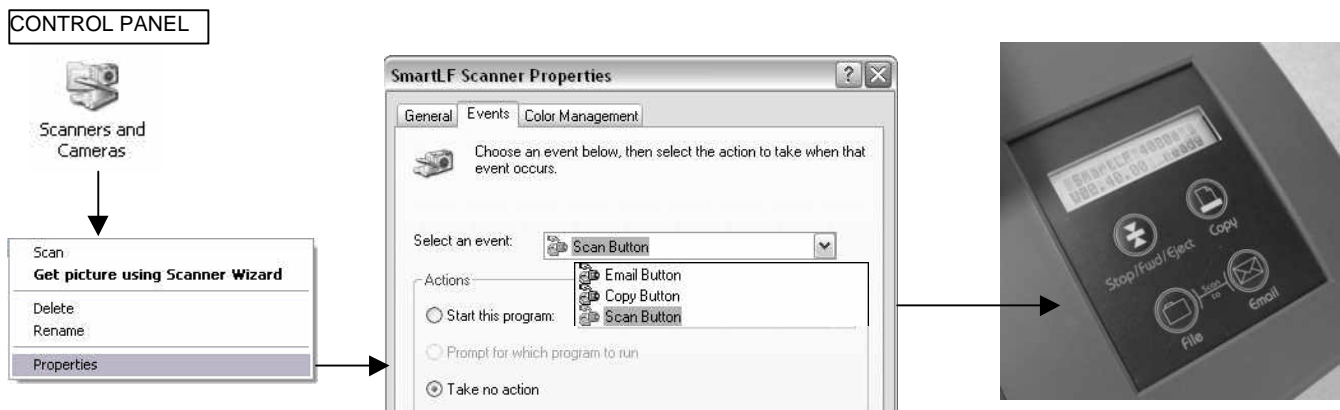
SmartLF software operates as follows:

Once started and a function is selected, SmartLF will continue scanning to file, copying to printer or emailing as each new document is fed into the scanner. Pressing the running function button again (hourglass showing) will cancel any operation and return the system to standby.

WINDOWS XP AND WIA SCANNER PANEL CONTROL

The XP Windows Image Acquisition Device Driver Interface (WIADDI) supports custom scanner interfaces allowing SmartLF hardware to start key program operations. The SmartLF user control panel has three blue buttons marked COPY, FILE and EMAIL. When set up in Windows XP these buttons allow the operator to control the operation of the SmartLF software from the scanner itself. They will only operate with the standard SmartLF software and only with

Windows XP. To set up the panel buttons go to the Windows XP Control Panel and set the properties for 'Scanners and Cameras' as below.



IMPORTANT: TO ACTIVATE THE SMARTLF S/W REMOTELY PLEASE PRESS THE BLUE SCANNER PANEL BUTTONS FOR AT LEAST 0.5 SECS

11. YOUR FIRST SCAN WITH SMARTLF



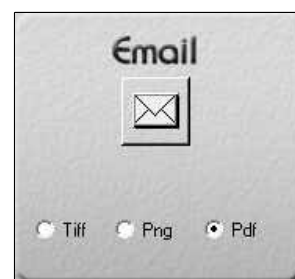
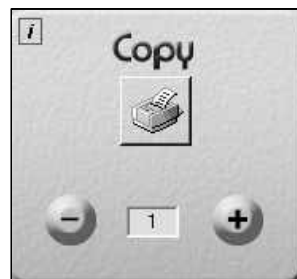
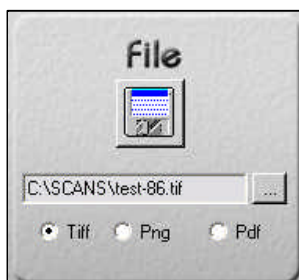
SmartLF is designed to make scanning-to-file, scanning-to-copy and scanning-to-email extremely simple to achieve.

Note that Colortrac recommend the emailing function be used for black and white TIFG4 technical drawings or small, low detail colour scans only.

[Load a document into SmartLF NOW](#)

(Until a document is scanned and displayed in the preview window, no zoom and crop tools are visible)

SMARTLF SCAN-TO- FUNCTIONS



FILES - SmartLF scanning to file is started by pressing the diskette icon in the **File** button. Use the Browse button to select the storage location for the new file first.

COPIES - SmartLF scanning to the Windows printer is started by pressing the printer icon in the **Copy** button. Select the target Windows printer where the copy will be printed first using the I-button.

EMAILS - SmartLF scanning to Email is started by pressing the envelope in the **Email** button. Requires a configured email client to be set up first.

NOTE: For fragile originals SmartLF can be slowed down using the Quality slider accessed from the i-box in the top left corner of the SmartLF interface.

As soon as the required function is selected SmartLF begins to scan the document loaded in the scanner or waits for the document to be loaded. SmartLF will display the animated icon showing a document being loaded into the scanner.

PRESSING THE RUNNING FUNCTION HOURGLASS ICON STOPS SMARTLF

SmartLF can also be controlled from the scanner's control panel by pressing the corresponding BLUE panel buttons. These will only operate the SmartLF software if they have been correctly configured through the Windows XP Cameras and Cameras icon that is located in the Windows XP Control Panel. Refer to Sect. 10.



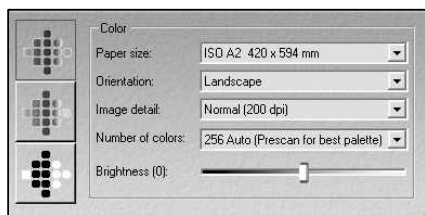
COPY

EMAIL

FILE



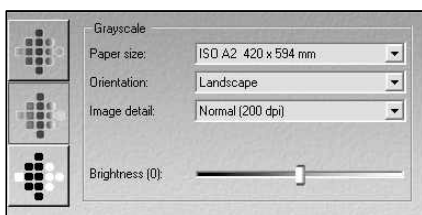
SMARTLF HAS THREE COLOUR MODES



COLOR

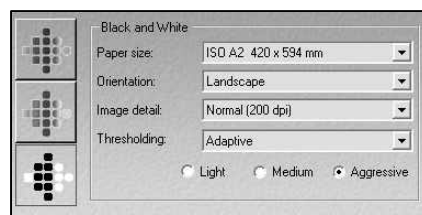
The color mode allows control of the number of colours and the brightness of the file, copy or emailed document image

16.7 million (Full color)
256 Auto (Prescan for best palette)
256 Fixed (Use last palette)



GRAYSCALE

The grayscale mode allows control of the brightness of the file, copy or emailed document image



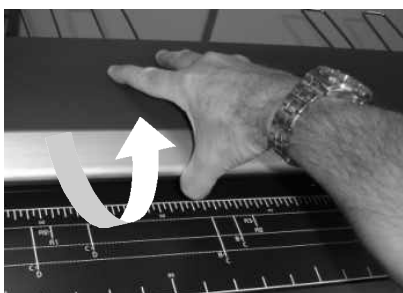
BLACK AND WHITE

The black and white mode allows control of the type and degree of thresholding of the file, copy or emailed document image

Simple
Adaptive

12. OPENING AND CLOSING THE COVER

The SmartLF Cover provides access to the document pressure adjustment mechanism. Open the cover by lifting it firmly from the front and centre with two hands so that it swings open and backward slightly beyond the vertical position.



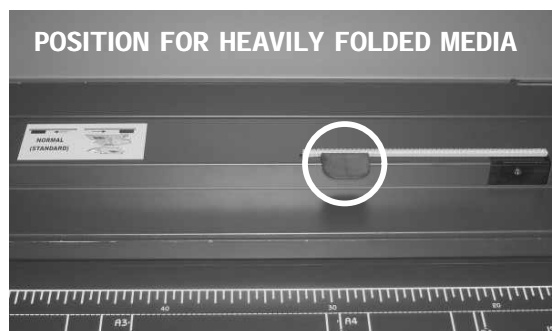
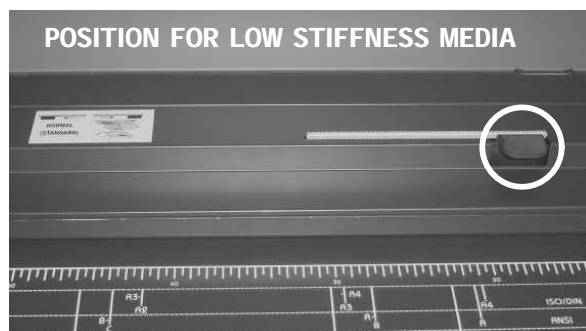
SmartLF Cover in the open position showing the two pressure adjustment sliders



WARNING - THE UPPER COVER DOES NOT LOCK and should be held with one hand at all times while a free hand is used to adjust the document pressure setting. To avoid personal injury it is not recommended to leave the cover of SmartLF unattended in the open position. To close the cover, lower it forward to the horizontal then push it down gently with two hands until it stops.

13. THE SMARTLF VARIABLE PAPER HOLD DOWN (VPHD) SYSTEM

Open the SmartLF cover (see earlier section). The upper cover opens in a similar manner to the main scanner lid revealing the VPHD adjustment sliders.

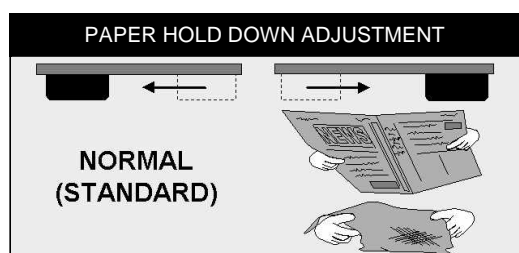


The VPHD has two connected tabs that slide left and right to adjust the pressure placed on the document during scanning. Contact image sensor scanner devices like SmartLF achieve higher performance when the document is maintained in close contact with the scanner glass. Folded documents may cause shadowing when scanned in greyscale or colour. SmartLF VPHD is used to minimise the effect of folds in scanned documents.

Moving the slider to the right (>) reduces the pressure to its lowest setting. In this position SmartLF can scan lightweight and low stiffness papers like newspapers. NOTE – Use the lowest pressure position to scan small size shiny surfaced documents.

Moving the slider to the left (<) increases the pressure to its highest setting. By moving the slider to the left, the VPHD can apply pressure to folded documents to reduce the depth of the folds or remove them completely from the scanned image. WARNING – Using too much pressure on a low stiffness document may cause media buckling or cause smaller documents to skew in the scanning mechanism.

The VPHD slider is continuously adjustable (<=>) between high and low pressure and may be used anywhere in the range to suit the stiffness and fold density of the document being scanned.

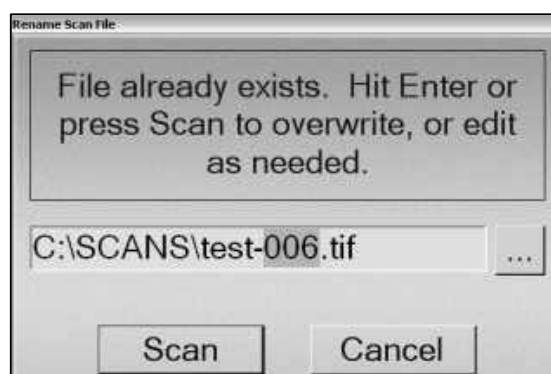


NOTE - VPHD PRESUURE IS EVEN ACROSS THE WHOLE SCAN WIDTH. BOTH SLIDER TABS ARE CONNECTED INTERNALLY TO PROVIDE A SINGLE DOCUMENT PRESSURE ADJUSTMENT. THE LEVERS DO NOT PROVIDE SEPARATE ADJUSTMENT FOR EACH SIDE OF THE SCANNING AREA

SMARTLF HAS INTELLIGENT FILE OVERWRITE/ RENAMING

If a file already exists inside the computer directory with the same name as the name the operator is about to use for a new scan, SmartLF will try to assist.

- If the file does not contain numerical information SmartLF pre-selects (blocks) the name part of the file ready for the operator to type in a new name.
- If the file contains numerical information SmartLF pre-selects ONLY the numerical part ready for the operator to type in a new number.



SMARTLF DOCUMENT SIZES

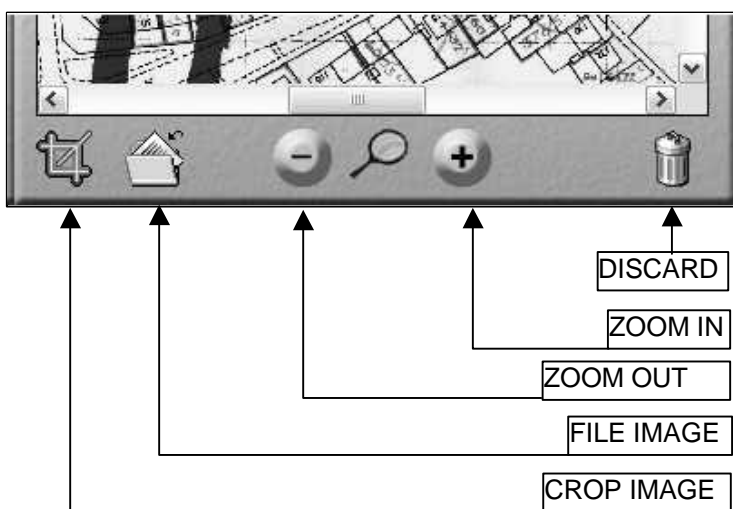
SmartLF has AutoSize, ISO, ANSI and ARCH paper sizes which can be selected from the Paper size scroll box.

NOTE: The effectiveness of Auto Size can be affected by the type of media loaded in SmartLF. For example transparent or non-square media may fail to auto size correctly.

Although SmartLF does not allow custom paper size scanning the product does permit any document appearing in the preview window to be cropped before being processed further. This is especially useful for extracting parts of larger drawings for emailing to colleagues, other offices or saving to disk.

Auto Size
ISO A0 840 x 1180 mm
ISO A1 594 x 840 mm
ISO A2 420 x 594 mm
ISO A3 297 x 420 mm
ISO A4 210 x 297 mm
ANSI A 8.5 x 11"
ANSI B 11 x 17"
ANSI C 17 x 22"
ANSI D 22 x 34"
ANSI E 34 x 44"
ANSI E+ 36 x 46"
ARCH A 9 x 12"
ARCH B 12 x 18"
ARCH C 18 x 24"
ARCH D 24 x 36"
ARCH E 36 x 48"

THE SMARTLF PREVIEW WINDOW



CROPPING IN SMARTLF

Use SmartLF CROP IMAGE to select an area of the image for scanning to file, to the Windows printer or email.

Pressing the CROP IMAGE icon on the Preview toolbar places a green crop square onto the currently displayed image. Use the grips at the corners to resize the crop boundaries. Clicking and holding the mouse button down on the centre of the square will move it across the image.

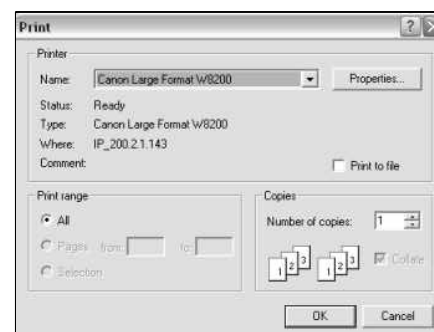


COPYING FROM SMARTLF

SmartLF uses any standard Windows printer driver for copying. The number of copies can be controlled from the COPY button by clicking on the + and – icons.

The print quality of the copy is controlled from the Windows driver Properties dialogue in the normal way.

SmartLF will copy all images at 1:1 i.e. no scaling will take place unless configured at the windows driver itself.



DOCUMENT SIZES MARKED ON THE SCANNER

To scan a non-standard size of document select a document size that is larger than the document you need to scan. The SmartLF software will allow 'cropping' (removal of unwanted square edges from) of the image before saving it to computer. If the document is rectangular the *auto-sizing* option will detect the width of the document and determine the length of the document automatically.

SIZE	ISO/DIN	SIZE	ANSI	SIZE	ARCH
A0	841mm x 1189mm	E	34in x 44 in	ARCH E	36inx 48in
A1	841mm x 594mm	D	34in x 22 in	ARCH D	36in x 24in
A2	594mm x 420mm	C	22in x 17 in	ARCH C	24in x 18in
A3	297mm x 420mm	B	17in x 11in	ARCH B	18in x 12in
A4	297mm x 210mm	A	11in x 8.5in	ARCH A	12in x 9in

NOTE: Auto-sizing is not 100% effective for all types of document.

TRANSPARENT AND OPAQUE ORIGINALS

SmartLF will set-size scan and auto-size scan, clear and opaque media. Clear acetate drawings will often produce better results when used with a white backing sheet. A scanning wallet with an integral white backing sheet can be effective.

DOUBLE-SIDED ORIGINALS

Originals that have information on both sides can sometimes benefit from being scanned with a black backing sheet placed behind the image to be captured. Wallets with a black backing surface and clear acetate front can be useful.

THICKNESS OF MEDIA COMPATIBLE WITH SMARTLF

SmartLF is compatible with many types of media including synthetic, polyesters, Mylar and general office tracing and inkjet papers. The accuracy of SmartLF is valid for media up to 0.8mm thick and may vary depending on the operating environment. The document thickness limit for SmartLF is 2mm.

STIFFNESS OF MEDIA COMPATIBLE WITH SMARTLF

SmartLF will handle all regular media of 60g/m² and above. Paper below this weight can have very low stiffness (for example some newspapers) and these may become creased in the scanner unless protected inside a suitable scan wallet. Wallets can be readily obtained from stationery suppliers or improvised by folding some clear acetate and placing the document into the fold. Best results are obtained by loading the wallet fold-first into the scanner. Set the VPHD for minimum pressure to reduce the chance of starting a 'concertina fold' when scanning low-stiffness papers.

14. SCANNER MAINTENANCE

SmartLF will need some occasional glass and colour calibration maintenance. For best results follow the instructions below.

GLASS CONTAMINATION AND SCRATCHING

The SmartLF scanner glass is chemically treated and should resist scratching from paper clips, abrasive dust and staples but Colortrac recommend that the operator take all reasonable steps to ensure that scan documents are clean and free from metallic appendages. The scan glass should be cleaned with a low-smear, high quality glass cleaning product and a clean lint-free cloth. In the event of the scan glass becoming badly scratched and affecting the scans, replacements can be ordered from your Colortrac supplier.

(More serious maintenance issues such as electronic or internal mechanical failure should be referred to your approved service agent for diagnosis and repair).

AUTOMATIC & MANUAL CALIBRATION OF SMARTLF

When the SmartLF Windows driver first communicates with SmartLF it activates the automatic calibration or normalisation process. The period between these calibrations is set for 1 hour (default) by the driver but can be altered using the Calibration program. Automatic calibration is internal to the scanner and needs no operator intervention or white target. Calibration starts automatically when more than 1 hour elapses since the last calibration. When SmartLF needs to calibrate it will delay the next requested scan by approximately 25 seconds. SmartLF informs the operator that a calibration is taking place by displaying the word 'Calibrating' on the scanner display panel. There is no indication that calibration is occurring at the computer display.

Why calibrate?

Calibration for SmartLF is needed mostly because the colour produced by the Contact Image Sensors (CIS) can alter slightly with small changes in ambient room temperature. Automatic calibration keeps SmartLF working with optimum image quality.

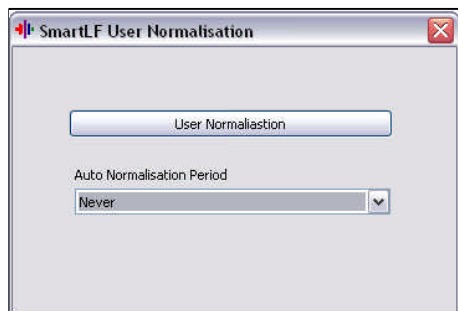
The Calibration Program

The period between calibrations can be altered, or where the room temperature is very stable (as in an air-conditioned office) it can be turned off completely. This is useful where a short delay before scanning every hour might be inconvenient, for example in a batch-scanning environment. Go to the program Start bar and select Programs, then Colortrac and then SmartLF Calibration. The SmartLF User Normalisation program interface will now display.

The program allows control over the is dual function:

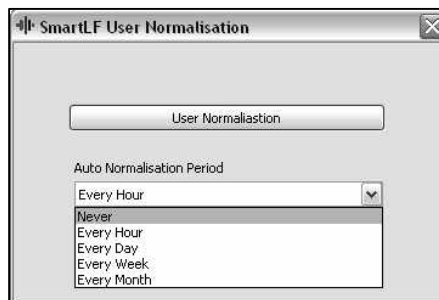
User Normalisation (external)

Insert a piece of clean white paper or card approximately 1016mm (40") x 410mm (16") into the scanner long edge first. Feed the paper until it is visible at the back of the scanner AND CHECK THE VPHD IS IN ITS HIGHEST PRESSURE POSITION (LEFT). Press the User Normalisation button to start the scanner normalisation process.



Auto Normalisation (internal)

Run this program to install a new calibration period within SmartLF or turn it **OFF** completely (to enable User Normalisation). In this example SmartLF Normalisation is being changed from 'Every Hour' to 'Never'. To change the calibration frequency scroll the list and select a different period.



It is important to understand that SmartLF only has one calibration memory. This means that if a User Normalisation is carried out the Auto Normalisation Period must then be set for 'Never' or the User Normalisation will be replaced by the Automatic one when the set period is reached and the scanner calibrates automatically.

ESSENTIAL CALIBRATION INFORMATION

- SmartLF will carry out an overdue calibration immediately after a scan is requested.
- Automatic Calibration will delay a scan by approximately twenty-five (25) seconds. This is normal.
- If a User Normalisation is carried out, always set the Automatic Normalisation Period to Never and move the VPHD (Variable Paper Hold Down) to its highest pressure position (to the left)

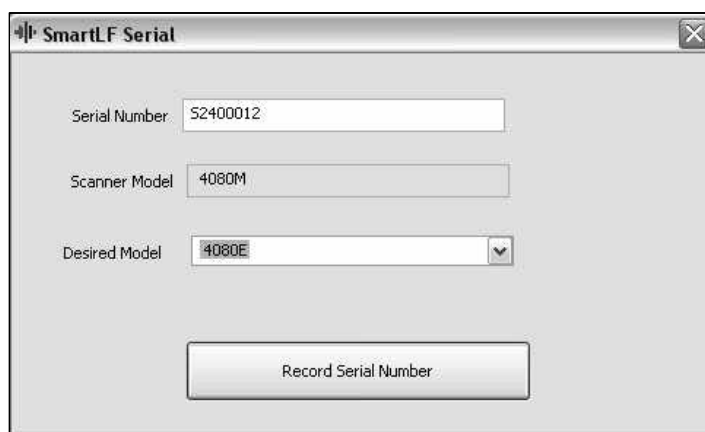
15. FIELD UPGRADE OF SMARTLF TO A HIGHER MODEL

If your scanner is a model 4080m (mono only) or 4080c (low speed colour) SmartLF it can be upgraded by purchasing one the three SmartLF Field Upgrade products available. The upgrades are ordered by Product Code.

The process for model upgrading is as follows:

STEP 1 – GENERATE THE UPGRADE FILE USING THE SMARTLF SERIAL PROGRAM

1. Confirm that SmartLF is connected and working
2. From the SmartLF distribution CD (V1.1 or later) locate the SmartLF serial.exe program which is inside the Scanner upgrade folder (itself inside the Utilities folder). You may need to alter your Explorer viewing options to see the full .EXE extension of this file.
3. Double-clicking "SmartLF serial" will retrieve the Scanner model number from the attached SmartLF scanner (in this case a 4080m).
4. In the Serial Number box type in the 8-digit number printed on the label attached to the back of the scanner.
5. Now select the model you wish your unit to be upgraded to using the Desired Model scroll bar
6. Press the 'Record Serial Number' button to create the upgrade file.

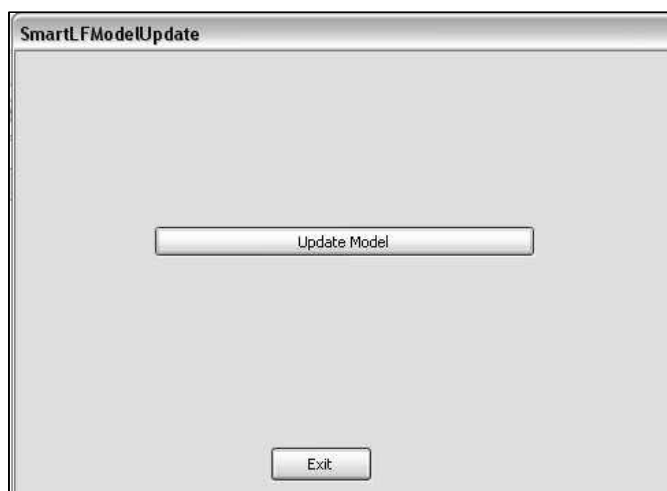


STEP 2 - SEND THE UPGRADE FILE WITH YOUR ORDER AND THE PRODUCT CODE YOU REQUIRE TO YOUR SMARTLF SUPPLIER TO OBTAIN YOUR UPGRADE PROGRAM

Product Code	Upgrade from	Upgrade to
P0002004	4080m	4080c
P0002005	4080m	4080e
P0002006	4080c	4080e

STEP 3 – UNPACK THE UPGRADE PROGRAM

7. The supplier will send you a file that has the serial number of the scanner to be upgraded as part of its name. Unpack this file to a temporary directory and run the program named "SmartLFModelUpdate.exe". Click the button labelled 'Update Model'. This will then upgrade the connected SmartLF scanner and display the words, 'Scanner firmware updated OK' on the scanner display.
8. Exit the program and then turn SmartLF OFF and ON again. Check the scanner display and verify that SmartLF is displaying the model type consistent with the upgrade process just carried out i.e. that the upgrade has been successful.



16. WARRANTY INFORMATION

SmartLF is warranted for a period of twenty-four (24) months from the original date of supply against defective materials and workmanship or the warranty which is offered in the local country where SmartLF has been supplied. In the event that warranty service is required you should return the product to the dealer from whom it was purchased and follow the warranty claims process.

However, Colortrac Ltd and its authorised distributors will comply with the warranty on the terms issued to purchasers in the country concerned by the dealers in those countries where the terms have been agreed with Colortrac Ltd.

In case of difficulty and to find where your nearest service agent or distributor is located please contact:

Colortrac Ltd
Kings Hall
St. Ives Business Park
St. Ives
Huntingdon
Cambridgeshire
PE27 4WY
United Kingdom

Tel: +44 (0) 1480 464618
Fax: +44 (0) 1480 464620

WARRANTY CONDITIONS

1. The warranty will not be honoured in a situation where the ownership is in doubt or where there is no direct proof of purchase.
2. The obligations of Colortrac are limited to the repair, or at its discretion, replacement of the product or the defective part.
3. Warranty repairs must be carried out by an Authorised Colortrac Service Agent who has undergone service training by Colortrac (or their appointed distributor). No reimbursement will be made for repairs carried out by non-Colortrac agents and any such repair work and damage to the product caused by such repair work will not be covered by the warranty.
4. The product shall not be adapted or the warranty will be voided
5. This warranty covers none of the following:
 - a) periodic maintenance and check-ups to replace or repair normal wear and tear items
 - b) costs incurred in moving or transporting the scanner
 - c) Misuse of the product or incorrect installation of the scanner.
 - d) Damage caused by lightening, water, fire, or other natural causes, poor ventilation, incorrect electricity supply or any other causes beyond the control of Colortrac Ltd
6. This warranty is valid for anyone who legally acquired possession of the product inside the warranty period.
7. Colortrac or its distributors shall not be liable for indirect or consequential loss or damage to equipment or property as a result of using the device.

COLORTRAC LTD.

17. MAIN FEATURES OF SMARTLF

- High-speed 400 dpi optical resolution large format 1016mm (40") scanning engine
- State-of-art Colortrac electronic design and signal processing technology
- Contact Image Sensor imaging technology requiring no stitching alignment and virtually no calibration
- Chemically hardened, impact resistant scan glass to minimise scratching and damage during scanning
- Exceptionally low maintenance
- Media transport optimised for handling lower weight and lower stiffness papers
- RGB, limited colour, greyscale and black and white scanning modes
- Lightweight portable desktop design with optional floor stand
- Unique maintenance features developed specially for this scanner
- Simple to use and install USB2 computer interface (hot pluggable)
- On-scanner controls and display for main functions and status reporting
- Standard File, Copy and Email software included with scanner
- High-specification software available as options
- Low power consumption
- Long product lifetime
- Good portability

18. APPENDIX 1. – COMPUTER REQUIREMENTS FOR SMARTLF

The minimum computer specification needed to achieve the stated SmartLF performance is as follows:

Operating system:	Windows XP or Windows 2000 (see note 4)
Processor:	At least 2.8GHz, HT (Hyper Threading) processor
Memory:	At least 512MB RAM
Data port:	A USB2 compatible interface (see note 5)

Notes:

1. The scan rate is proportional across the full range of resolutions supported by the scanner. Actual scan times will depend on the host system performance. Speeds quoted are for documents less than 24 in width (60.96 cm); wider documents scan half this speed. The quoted scan accuracy is valid for media up to 0.8mm thick and may vary depending on the operating environment and the type & thickness of media. SmartLF scanners are tested using a Mylar target at 20°C +/- 3°C, 60% +/- 10% RH with the media feed set to standard. Some advanced features may not be available in Windows 2000. Contact your supplier for advice on the optimum system configuration for your application. Colortrac Ltd reserves the right to change or amend specifications without notice. Colortrac and Smart LF are trademarks of Colortrac Ltd. All other trademarks are the property of their respective owners. Copyright © 2004 Colortrac Ltd.

2. Windows XP is a mandatory requirement to make available operation of the scanner from the control panel. For Windows 2000 users there may be limitations on the operational control available through the SmartLF control panel. This may change without notice.

3. The Microsoft .NET environment is a Windows XP Service Pack Update. .NET is necessary for operation of the SmartLF standard SmartLF graphical user interface and **MUST** be loaded as part of the operating system. Microsoft fully supports the distribution of this enhanced environment and has committed to embodying this into the standard Windows XP operating system– date unknown at this time.

4. Windows 98, ME, NT4 and Windows 2000 Server are not compatible with SmartLF.

5. A USB2 computer interface is a mandatory requirement for SmartLF. Slower USB1.1 interfaces will cause slow scan speeds and possible SmartLF malfunction

HOW TO CHECK THAT THE COMPUTER HAS A USB2 INTERFACE

Go to the Control Panel and open up Device Manager. Expand the Universal Serial Bus Controller device. If one of the USB sub-branches contains the word **'enhanced'** then the PC is likely to have a USB 2 driver loaded on one of its USB ports. Unfortunately this does not guarantee that the scanner is plugged into the port using the USB 2 driver.

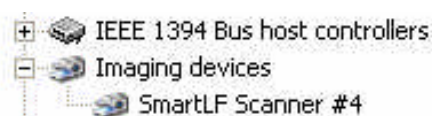
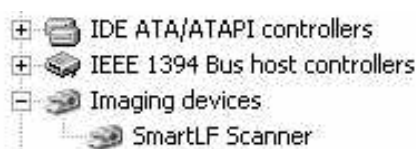
Computers often have multiple USB ports and some more than one USB controller. If SmartLF has been successfully installed on a computer but the scanner connection is changed to a different USB port (for example on the rear of the computer) this will cause the driver to be installed again. This is effectively a new installation.

Please be warned that this check will fail to detect if a USB 1.1 hub or extension cable is installed between the USB2 port and the scanner or if another USB1.1 device is plugged into the same controller. Either of these will effectively make the connection to the scanner USB1.1 only.



The Imaging devices listing for SmartLF can appear with a #number after the words SmartLF Scanner – this is normal. Below shows SmartLF when first installed and again when it is connected to a different USB port (#4) on the rear of the computer.

NOTE: Every port can potentially have a different version of the SmartLF driver so if you have recently upgraded the driver for SmartLF and changed the USB port you regularly connect through you should check the driver level using the Properties for that particular port.



THE USB2 INTERFACE / COMPUTER CONNECTION



IMPORTANT NOTE: If you are using other USB1.1 keys (dongles) on the same computer, ensure that SmartLF does not share the same USB circuitry inside the computer or scanning speeds may be reduced. Use a high quality USB2 cable and do not extend the connection between the computer and SmartLF beyond 3m maximum.

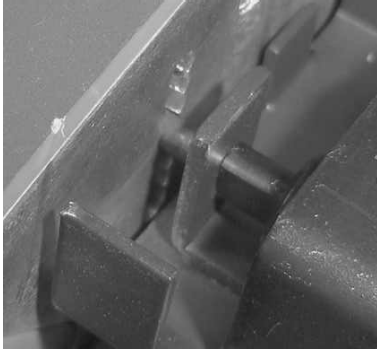
19. APPENDIX 2. - USING THE THICK MEDIA ADJUSTMENT

SmartLF is able to accept thick documents if they are lightweight and have a uniform thickness. Documents should have a surface that provides adequate friction against the rollers or the scanner may not be able to transport it properly. A uniform speed is very important during scanning and any slippage or skewing of the media will affect the scan result. It is recommended that scanner is slowed down using the speed control in ScanWorks or the quality setting in SmartLF software.

PART 1.

- Open the top cover of SmartLF and lean it backward to its vertical rest position.
- Pull inwards on one of the handles that form part of the SmartLF lid mechanism. This will disengage the front and rear locking pins for that side allowing the lid to float in the vertical direction. **WARNING** - It is not recommended to pull inwards on both handles as this is the recognised procedure to remove the complete lid mechanism for maintenance or replacement.
- While raising the unlocked side insert an edge of the thick media into the scanner.
- Moving to the opposite side retract the locking pins on that side by pulling the handle inwards
- Raise the unlocked side, insert the remainder of the media, square it up and then lower the lid again.



PART 2.

- Retract one side and push down lightly to find the next 'tightest' position for the lid locking pins to engage in while gripping the media. Note this height and set the lid to the same height on the opposite side of the scanner.
- Close the cover
- Press the red button momentarily to test the movement of the document
- If the document slips, increase the pressure
- If the motor stalls, decrease the pressure
- Eject the media and reload -
UNTIL THE THICK MEDIA IS GRIPPED BY THE REAR ROLLERS

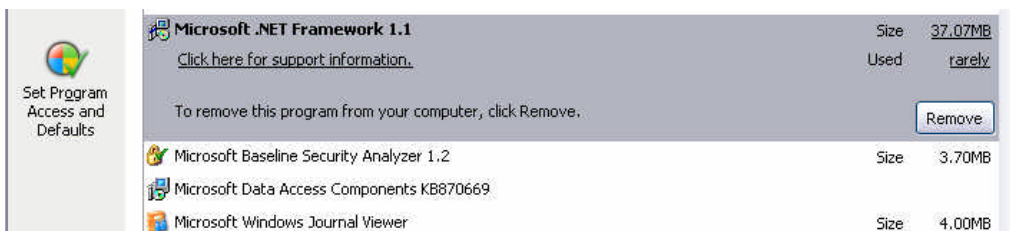
DUE TO THE VARYING SURFACE FRICTION OBTAINABLE AND EXCESSIVE WEIGHT OF SOME THICK MEDIA IT MAY NOT BE POSSIBLE TO FIND A SETTING WHICH ALLOWS THE MOTOR TO RUN AND MOVES THE DOCUMENT IN A MANNER SATISFACTORY FOR SUCCESSFUL SCANNING.

20. APPENDIX 3 - WINDOWS .NET FRAMEWORK ENVIRONMENT

The Microsoft .NET Framework 1.1 allows users to run applications built using the .NET Framework 1.1 like the Colortrac SmartLF application. If the .NET Framework is not installed on the scanner computer the SmartLF program may load and display onscreen OK but will not be able to communicate with the scanner.

CHECKING FOR AN EXISTING INSTALL OF MICROSOFT .NET FRAMEWORK 1.1

Go to the Control Panel and look for the .NET entry in the programs listing.



If you are using [Windows Server 2003](#) the .NET Framework 1.1 is installed by default

21. SMARTLF MODEL 4080 TECHNICAL SPECIFICATION

	MONOCHROME	COLOUR	ENHANCED COLOUR	
Scan Speeds¹ in/s (cm/s)	@200 dpi	@200 dpi	@200 dpi	
~ full colour	n/a	0.84 (2.13)	3.36 (8.53)	
~ greyscale & bi-level	10.10 (25.6)	10.10 (25.6)	10.10 (25.6)	
	@400 dpi	@400 dpi	@400 dpi	
~ full colour	n/a	0.42 (1.07)	1.68 (4.26)	
~ greyscale & bi-level	5.04 (12.8)	5.04 (12.8)	5.04 (12.8)	
Scan Modes	n/a	16.7 Million Colour RGB (Best 24-bits of 36-bits captured)		
	256 Level Greyscale (8-bit)	256 Level Greyscale (8-bit)		
	Bi-level (1-bit, B&W)	Bi-level (1-bit, B&W)		
Colour Space	n/a	Normalised / Linearised Raw RGB		
Colour Image Processing	n/a	Gamma, Brightness, Black & White Point adjustment		
Resolution (all models)	2400 dpi maximum / 400 dpi optical / variable in 1 dpi steps from 100 to 2400 dpi			
Scan Accuracy²	All models +/- 0.1% +/- 1 pixel			
Maximum Image Width	40 in (101.6 cm)	Image Length	not limited by the scanner	
Maximum Media Width	44 in (111.8 cm)	Media Thickness	0.08 in (0.2 cm)	
Media Feed System	Reliable, front loading & straight through media path for user friendly jam-free operation			
	Chemically hardened, scratch resistant scan glass with easy-clean access via hinged grip-roller cover			
	Side justified, one-way document transport with adjustable pressure plate (paper hold down) continuously variable over a range of 0.08 in (0.2 cm) with 0.06 in (0.15 cm) pre-compression			
	Precision power rollers with 20 offset, dual independently suspended high grip contour rollers transport documents gently & accurately through the scanner			
	Accurate, zero maintenance optical media sensors & automatic media size detection			
Digital Imaging Technology	Contact Image Sensor (CIS) technology - requires no stitching or maintenance adjustment			
	5 x close-spaced 'deep focus' CIS (17,000 pixels)			
	Integral LED illumination for instant scanning from power-on & practically unlimited life span			
	36-bit digital colour image capture			
	Panchromatic Black & White			
	Factory set, permanent Smart colour calibration			
Digital Image Processing	2D Intelligent Adaptive Thresholding (IAT) (1-bit mode)			
	Fixed Threshold Black & White (1-bit mode)			
User Status & Control	LCD screen displaying scanner status, mode & settings			
	One touch, push button operation for scan_to_file, scan_to_copy, scan_to_email			
User Maintenance	Customer installable plug 'n' play scanner			
	Simple cleaning			
Software (included)	Colortrac SmartLF ready-to-run software for scan_to_file, scan_to_copy, scan_to_email			
	Windows Image Acquisition (WIA) / TIFF, JPEG, PDF file formats supported			
Software Options	ScanWorks, CopySmart, Predictor, ISIS			
ScanWorks Features	Extensive 24-bit RGB file formats - JPEG2000, PNG, PCX, WMF, PICT, CALS			
	256 & 16 Colour Feature Extraction / Indexing (8-bit & 4-bit)			
	256 & 16 Colour Optimised RGB (8-bit & 4-bit), Dithered Black & White (1-bit)			
	Virtual Black & White post scan 2D intelligent adaptive thresholding			
	2D Image Sharpening / Soften / Blur / 3x3, 5x5 Noise removal filters			
CopySmart Features	Connects the scanner & PC to a printer to create a scan_to_print digital copy system			
	All commonly available wide format inkjet printers supported			
	Simple, user process for colour profiling of printer, ink and media combinations			
	Copy count / Preview / Zoom / Crop / Enlarge / Reduce / Image enhancement			
	Selectable presets for suitable original types - maps, AEC / CAD drawings, lineart, text			
Scanner Interface kit (incl.)	480 Mbits/sec USB 2 (on scanner) / 2m USB 2 cable / local power cable / rear media supports			
Scanner Options	On-site upgrade from mono to colour and colour to enhanced colour			
Scanner Accessory Options	Floor stand (scanner may be used on a desktop or table without the stand)			
Equipment	Height	Width	Depth	Weight
~ scanner	6.69 in (17 cm)	54.72 in (139 cm)	13.00 in (33 cm)	60 Lbs (26.5 Kgs)
~ scanner on stand	37.40 in (95 cm)	54.72 in (139 cm)	21.65 in (55 cm)	81 Lbs (35.8 Kgs)
~ scanner packed	13.00 in (33 cm)	60.63 in (154 cm)	19.69 in (50 cm)	78 Lbs (35.0 Kgs)
~ stand packed	3.54 in (9 cm)	60.63 in (154 cm)	19.69 in (50 cm)	27 Lbs (12.0 Kgs)
~ operating environment	15 ~ 30°C, 15 ~ 85 % RH, non-condensing			
~ power requirements	90 ~ 250 VAC autosensing, 47 ~ 63 Hz, 24 VA (scanning) 15 VA (standby)			
Compliances	CB, CE, FCC, UL			
Recommended PC System³	P4 2.8 GHz Processor with hyper threading / 512 MB RAM / USB 2 / Windows™ XP & 2000			

¹The scan rate is proportional across the full range of resolutions supported by the scanner. Actual scan times will depend on the host system performance. Speeds quoted are for documents less than 24 in width (60.96 cm); wider documents scan half this speed. ²The quoted scan accuracy is valid for media up to 0.8mm thick and may vary depending on the operating environment and the type & thickness of media. SmartLF scanners are tested using a Mylar target at 20°C +/- 3°C, 60% +/- 10% RH with the media feed set to standard. ³Some advanced features may not be available in Windows 2000. Contact your supplier for advice on the optimum system configuration for your application. Colortrac Ltd reserves the right to change or amend specifications without notice. Colortrac and Smart LF are trademarks of Colortrac Ltd. All other trademarks are the property of their respective owners. Copyright © 2004 Colortrac Ltd.

22. DECLARATION OF CONFORMITY

Manufacturer: Colortrac Ltd.
Kings Hall
St Ives Business Park
St Ives
Cambridgeshire, PE17 4WY
United Kingdom

Details Of Electrical Equipment

Model Number: Smartlf 4080

Description: Large Format Colour Document Scanner

Directives this equipment complies with: LVD 73/23/EEC
EMC 89/336/EEC
CE Marking 92/31/EEC

Harmonised standards applied in order to verify compliance with Directive:
BS EN60950:1992
EN55024-1:1998
EN61000-3-2:2001,-3-3:-4-2 to -4-6:-4-8:-4-11
EN55022:1998 Class A & +A1 & A2: 2003:

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures (**note 1**)

Other Standards Applied CFR47:2002 Class A

Test Report Issue by : dB Technology

Year in which CE mark was affixed: 2004

Issued: 17 August 2004



signed
Graham Tinn
Managing Director
Colortrac Ltd.

note 1:- The "domestic environment" is an environment where the use of broadcast radio and television receivers may be expected within a distance of 10 meters of the apparatus concerned.

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Revision 1.0

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